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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,389	08/22/2003	Yiliang Wu	D/A2375	4880

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EXAMINER	
RODGERS, COLLEEN E	
ART UNIT	**PAPER NUMBER**
2813	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/646,389	WU ET AL.	
	Examiner	Art Unit	
	Colleen E. Rodgers	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,30,31 and 46-48* is/are pending in the application.

4a) Of the above claim(s) *5,9,10,13,17-23,30 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,11,12,14-16 and 46-48* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/22/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. As stated by the Applicants' response, received 19 May 2005, to the Examiner's Office Action of 1 April 2005, Applicants elected from the Examiner's listing of possible groups of distinct species the following:

A-1, with the number 2,

B-1, with the number 1,

C-2, with the number 2; and,

D-1.

2. The Examiner's listing of possible groups of distinct species is partially incorrect. The group D (sequence of elected segments) should have included a proviso that clarified that group D is moot in the event that the Applicants selected group A-1. In short, due to the election of group A-1, with the number 2, the lack of substituent groups renders the two thienylenes equivalent, such that their order is irrelevant. Therefore, the election of group D-1 was unnecessary.

3. Claims 1-4, 6-8, 11, 12, 14-16, and 46-48 are drawn to the elected species. However, claims 5, 9, 10, 13, 17-23, 30 and 31 are drawn to nonelected species and are therefore withdrawn from consideration.

4. Applicants' traverse is persuasive; therefore, claim 46 will be considered to be generic.

Claim Objections

5. Applicant is advised that should claim 6 be found allowable, claim 7 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are

duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). This duplicity in the claims is a result of the restriction requirement.

6. Claim 7 is objected to because of the following informalities: the word "arylene" should be preceded by a modifier (i.e., "said"). Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-4, 6-8, and 46-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Oguma et al (US 2003/0165713 A1).

9. Regarding Claim 1, Oguma et al discloses "an electronic device [see page 1, paragraph 0002] containing a thienylene-arylene polymer [see formula (1), where Ar_{1-6} may be an arylene group or a heterocyclic compound group, i.e. page 11, formula (97)] comprised of a repeating segment containing at least one 2,5-thienylene unit ... and at least one arylene unit," and furthermore wherein "each R is independently an alkoxy side chain [see page 12, paragraph 0040]," and finally wherein "the number of said arylene units is from about 1 to about 3 [see page 1, paragraph 0009]."

10. Regarding Claim 2, Oguma et al discloses a device wherein "R contains from about 1 to about 25 carbon atoms [see page 14, paragraph 0054]," wherein "the number of 2,5-thienylene ... units [is] from 0 to about 10 [see page 1, paragraph 0009]."

11. Regarding Claim 3, Oguma et al discloses a device wherein "a and b are 1 or 2 [see page 14, paragraph 0054]."

12. Regarding Claim 4, Oguma et al discloses a device wherein "R is alkoxy," [see page 12, paragraph 0040], wherein R may be alkoxy, which necessarily includes: "pentyloxy, hexyloxy, heptyloxy, octyloxy, nonyloxy, decyloxy, undecyloxy, dodecyloxy, tridecyloxy, tetradecyloxy and pentadecyloxy."

13. Regarding Claim 6, Oguma et al discloses a device using a thienylene-arylene polymer wherein "said arylene is a dialkoxyphenylene [see formula (5) and paragraph 0054]."

14. Regarding Claim 7, Oguma et al discloses a device using a thienylene-arylene polymer wherein "said arylene is a dialkoxyphenylene [see formula (5) and paragraph 0054]."

15. Regarding Claim 8, Oguma et al discloses a thienylene-arylene polymer wherein the aforementioned dialkoxyphenylene is selected from the group consisting of "bis(pentyloxy)phenylene, bis(hexyloxy)phenylene, bis(heptyloxy)phenylene, bis(nonyloxy)phenylene, bis(undecyloxy)phenylene, bis(dodecyloxy)phenylene, bis(tridecyloxy)phenylene, bis(tetradecyloxy)phenylene, and bis(pentadecyloxy)phenylene" [see page 13, formula (5) and paragraph 0054], wherein R_6 may be alkoxy with n representing an integer from 0 to 4, which necessarily includes the abovementioned compounds.

16. Regarding Claim 46, Oguma et al discloses "an electronic device [see page 1, paragraph 0002] ... containing a thienylene-arylene polymer [see formula (1), where Ar_{1-6} may be an arylene group or a heterocyclic compound group] comprised of a repeating segment containing at least one

2,5-thienylene unit ... and at least one arylene unit," and furthermore wherein "the number of said arylene units is from about 1 to about 3 [see page 1, paragraph 0009]."

17. Regarding Claim 47, Oguma et al discloses a device wherein "the 2,5-thienylene segment comprises at least one 2,5-thienylene unit."

18. Regarding Claim 48, Oguma et al discloses a device wherein "the arylene segment comprises at least one arylene unit, wherein each R is independently an alkoxy side chain [see page 12, paragraph 0040]; and a and b represent the number of R groups, and wherein the number of said arylene units is from about 1 to about 3 [see page 1, paragraph 0009]."

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. Claims 11, 12 and 14-16 are rejected under 35 U.S.C. 103(a) as being obvious over Garnier et al (USPN 5,347,144) in view of Oguma et al (US 2003/0165713 A1).

22. Regarding Claim 11, Garnier et al discloses "a thin film transistor [see column 2, lines 20-21] comprised of a substrate [see column 2, lines 16-19], a gate electrode [see column 1, lines 15-16], a gate dielectric layer [see column 1, lines 16-17], a source electrode [see column 2, line 23] and a drain electrode [see column 2, line 23]." Although Garnier et al discloses a polymeric semiconductor layer, they do not disclose the thienylene-arylene polymer of claim 1. Oguma et al teaches the thienylene-arylene polymer as set forth above in Claim 1. It would have been obvious to one of ordinary skill in the art at the time of invention to replace the polymer disclosed in Garnier et al with that disclosed in Oguma et al. One would have been motivated to do so by the desire to provide a polymer compound having large charge transporting properties [see Oguma et al, paragraph 0007].

23. Furthermore, regarding Claim 12, Oguma et al discloses that "R is alkoxy containing from about 5 to about 25 carbon atoms" as set forth above in Claim 2.

24. Regarding Claim 14, Oguma et al further discloses that "a and b are independently 1 or 2" as set forth above in Claim 3.

25. Regarding Claim 15, Oguma et al discloses a device wherein "arylene is a dialkoxyphenylene" as set forth above in Claim 7.

26. Regarding Claim 16, Oguma et al discloses a thin film transistor wherein said "dialkyoxyphenylene is selected from the group consisting of bis(pentyloxy)phenylene, bis(hexyloxy)phenylene, bis(heptyloxy)phenylene, bis(nonyloxy)phenylene, bis(undecyloxy)phenylene, bis(dodecyloxy)phenylene, bis(tridecyloxy)phenylene, bis(tetradecyloxy)phenylene, and bis(pentadecyloxy)phenylene" as set forth above in Claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen E. Rodgers whose telephone number is (703) 872-0237. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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